AFFIDAVIT OF DAVID ROSS
Relating to United States Patent Application Serial No. 10/648,266, Filed August 27, 2003

I, DAVID ROSS, of the City of Nepean, of the Province of Ontario, in the country of Canada, MAKE OATH AND SAY AS FOLLOWS:

1. I am a named inventor for United States Patent Application Serial No. 10/648,266, filed on August 27, 2003, entitled "VIDEO PRODUCTION SWITCHER WITH INTEGRATED DIGITAL VIDEO PROCESSING UNIT" (hereinafter "The Application"), which is a continuation of United States Patent Application Serial No. 09/493,182, filed January 28, 2000, which in turn claims the benefit of United States Provisional Patent Application Serial No. 60/117,676, filed January 28, 1999, and as such have knowledge of the facts contained herein.

2. THE invention disclosed and claimed in The Application was conceived and completed in Canada, as part of my duties for my employer.

3. THE invention disclosed and claimed in The Application was implemented in the "Synergy Series Digital Production Switchers" product line of Ross Video Limited.

4. THE "Synergy Series Digital Production Switchers" product line implementing the invention disclosed and claimed in The Application was advertised in a 1998 Product Catalog of Ross Video Limited, printed in March 1998. Attached as Exhibit "A" are copies of the cover and pages 1 to 13 of the Product Catalog.

5.   THE dedicated connections claimed in The Application enable a Digital Video Effects (DVE) module to be built into every keyer. This feature is specifically noted on page 11 of the 1998 Product Catalog of Exhibit "A" in the paragraph entitled "Squeeze & Tease".

6.   AN operational Synergy Series Digital Production Switcher was exhibited and demonstrated at a National Association of Broadcasters (NAB) show, which ran from April 6 to 10, 1998, in Las Vegas, Nevada (NAB '98). Attached as Exhibit "B" are copies of photographs dated April 8, 1998, showing the Synergy Series Digital Production Switcher as exhibited and demonstrated at NAB '98.

7.   DURING NAB '98, I provided operational demonstrations of the Synergy Series Digital Production Switcher. Attached as Exhibit "C" is a copy of my notes for those presentations. The second paragraph in Section 3.0 entitled "Squeeze & Tease" on page 2 of the notes specifically mentions that a 2D DVE was built into every keyer.

8.   THE Synergy Series Digital Production Switchers received an award at NAB '98. Attached as Exhibit "D" is a copy of a print ad acknowledging an "Editor's Pick of the Show" Award to Ross Synergy Series Digital Production Switchers for its "extensive future package which includes "Squeeze & Tease" DVE effects in every keyer."

9.   DEVELOPMENT of the Synergy Series Digital Production Switchers product line continued after NAB '98, and a revised design also incorporating the invention disclosed and claimed in The Application

was subsequently completed. Attached as Exhibit "E" are clearer copies of the original dated drawings filed as Figures 3 to 34 of The Application. With the exception of Figure 27, which is not material to the claimed invention, all of the drawings are dated on or before December 17, 1998.

SWORN BEFORE ME at the City of

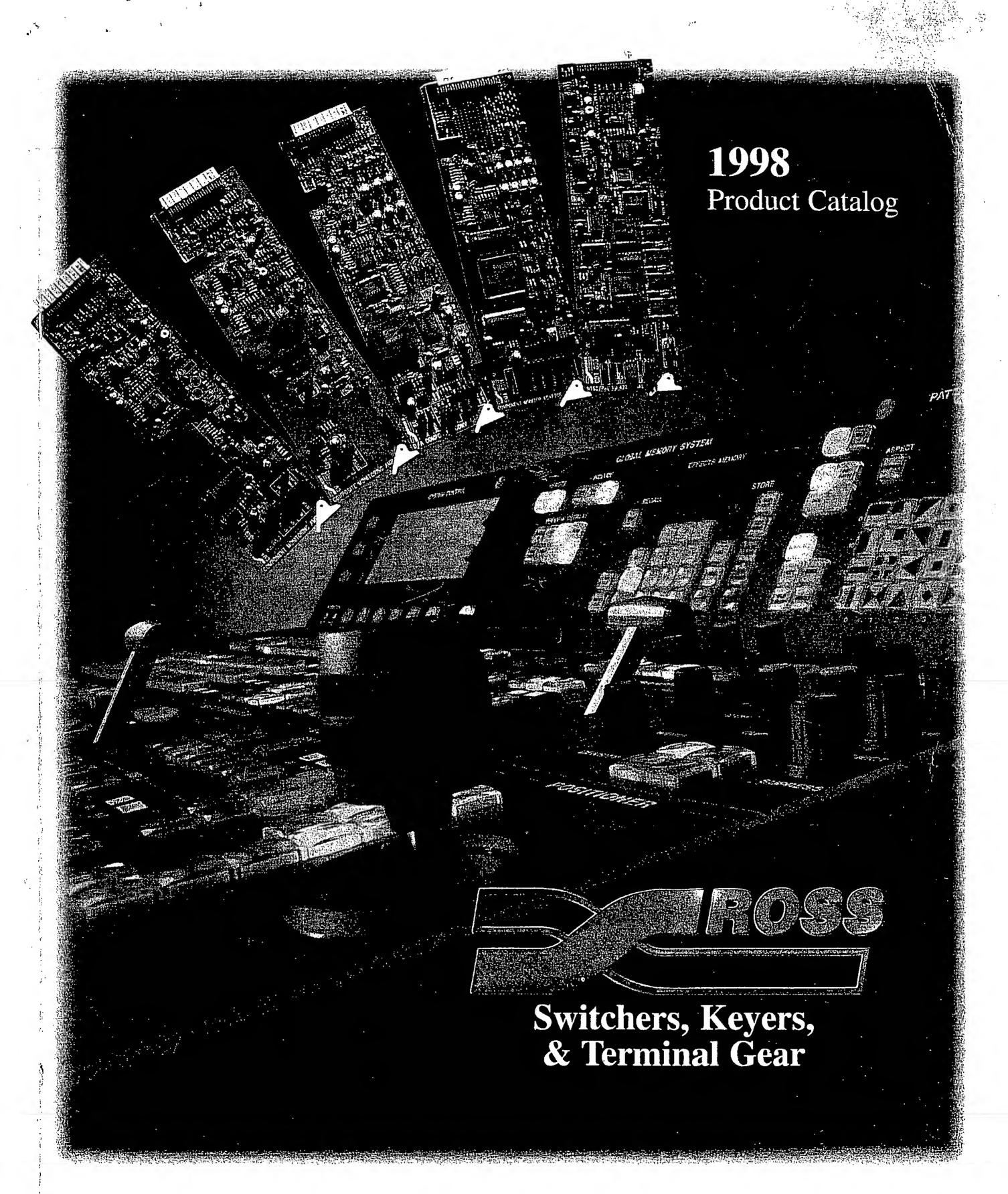Ottawa, in the Province of Ontario,

Canada, this *2 6* day of *June* ,

2007 .

)
)
)
)
)
)
)
)_____
)   David Ross
)
)
)
)
)
)
)

_____
A Commissioner for Taking Oaths

BRADLEY H. WRIGHT, B.A., LL.B.
Barrister, Solicitor & Notary
2nd Floor, 900 Greenbank Road
Ottawa, Ontario, Canada K2J 1S8

EXHIBIT A

This is Exhibit ....A........... referred to in the
affidavit of ....DAVID....Ross..............
sworn before me, this.......26.........
day of.......June..............19..07...

....
A COMMISSIONER FOR TAKING AFFIDAVITS

1998
Product Catalog
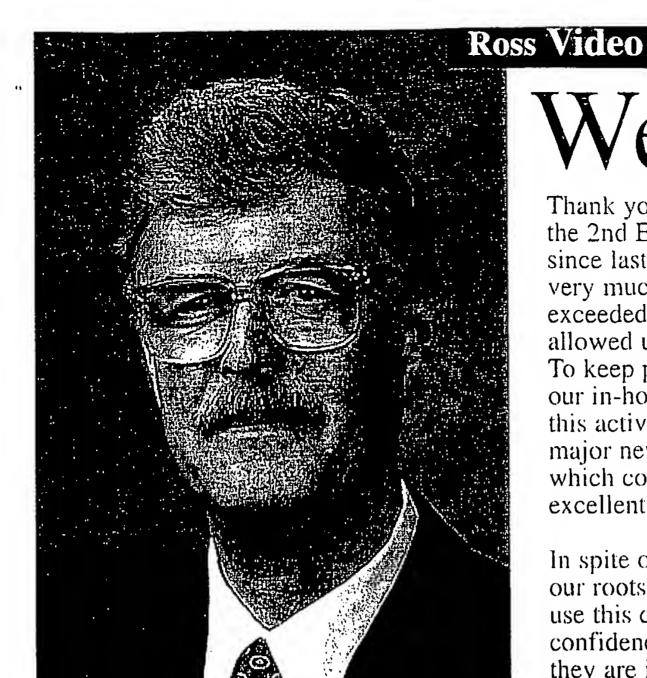
ROSS

**Switchers, Keyers,
& Terminal Gear**

Welcome

Thank you for your interest in Ross Video products. This is the 2nd Edition of our catalog and there are many new products since last years' issue. I'm pleased to say that Ross Video is very much a thriving company. Our sales last year have vastly exceeded anything in our history. This sales success has allowed us to almost double our sales and marketing staff. To keep pace, manufacturing has expanded and enhanced our in-house surface mount capabilities. Of course, much of this activity has followed the very successful introduction of major new products from our expanded development groups which continue to create innovative products combining excellent performance with great value.

In spite of our rapid growth, we at Ross have not forgotten our roots and guiding principles. I can assure you, when you use this catalog, you can select Ross products with absolute confidence. Simply stated, Ross products do exactly what they are intended to do. You can rely on this. Need proof? -just ask any Ross customer.

As a special treat, I'm sure that you'll find the candid product development stories from David Ross (see page 3) to be interesting and provide an unusually fresh behind-the-scenes peek into the development activities at Ross.

Our engineers continue to turn out new products every few weeks. Many of our most popular products were developed at the request of our customers, if you have a special requirement, please let us know. We hope you enjoy our catalog.

John Ross President

ROSS

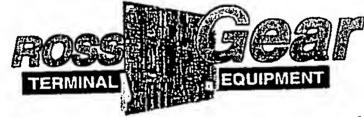## Switchers, Keyers, & Terminal Gear

New Products

Growth

Last year marked another great year of sales growth. Our line of terminal equipment products really took off and our line of analog production switchers continued to sell very well.

New Products

We have continued to invest heavily in Research & Development. Ross engineers continued to develop and introduce many new products throughout the year. There were several new additions to our Digital terminal equipment line including the DVB-8020 Digital Video Buffer, ADC-8033 RGB/YUV to 4:2:2 Serial Converter, DSS-8022 Dual Serial 2x1 Switch and CDK-101M Component Digital MultiKeyer. Analog products included the AVM-7900 Mini Master Control Switcher and SAA-7533 Set Up Adding Amplifier. Our terminal equipment products were adapted to the telecom market with the addition of a 48 Volt DC power supply to the product line.

At Ross, we are excited about the introduction of our new Synergy Series Digital Production Switchers. We believe that the timing of this product line could not be better with the vast majority of the broadcast market ready to move to digital. The Synergy Series utilizes the latest digital technology with operational features based on 24 years of experience building production switchers and a deep understanding of production requirements. There are some very powerful features in this new product line that you won't see anywhere else.

We have introduced the RossGear name to brand our terminal equipment products. Ross now has a comprehensive array of high quality distribution and conversion products to fit most applications. This product line will continue to grow, with many exciting introductions planned throughout the year.

Analog Commitment

Ross will continue to manufacture analog production switchers and terminal equipment. This continues to be a good market for us and our sales have been solid. There are many customers for whom it makes sense to keep their facilities analog rather than go digital. Ross will support these customers.

HDTV

Ross is actively involved in HDTV and will have products for this market at an appropriate time. Stay tuned.

Tel
Fa:

Switchers, Keyers, & Terminal Gear

Founded in 1974 by John Ross, Ross Video is a company dedicated to designing and manufacturing the best in Switchers, Keyers and Terminal Gear. Ross Video focussed exclusively on analog production switchers until a decision was made 5 years ago to expand our focus and apply our engineering expertise to Terminal Gear and Keyers. The Ross product line has grown rapidly since then and sales results have been dramatic with an average growth of over 30% per year since fiscal 92/93.

Ross has extensive expertise in both Digital and Analog circuit design. The rapid growth of our product lines has been greatly assisted by having two focussed and efficien development groups, one in Ottawa for production switchers and another in Iroquois for distribution product The excellence of Ross engineering has led to the design of products for Lockheed Martin that will be used on the International Space Station.

Ross has two manufacturing facilities in Iroquois in which our products are built and tested. The Ottawa and Montreal international airports are nearby, making worldwide shipments efficient and reliable. We are locat less than a mile from the United States and have a depot just minutes away in New York state. In most cases goo can be shipped anywhere in North America by next day.

Ross is a privately held company and all growth has bee internally financed. This provides Ross with total contro over its own destiny. Our expansion has been carefully managed with our production facility maintaining string controls on quality. We have consistently met very tight delivery deadlines for both our domestic and internation customers.

Ross Video has satisfied customers throughout the worl (and soon in outer space). Our broadcast customer reference list includes NBC, ABC, CBS, Fox & HBO in the US, CBC, CTV and Global in Canada, TVE in Spain KBS in Korea, SABC in South Africa, Televisa in Mexi and ABC in Australia. We are providing broadcast solutions to many cable companies such as Time Warne TCI and Continental Cable as well as Direct to Home broadcasters such as SKY TV. We have dozens of educational users ranging all the way from the Universi of Alaska down to the University of Florida. We have enjoyed tremendous success with sports stadiums such Camden Yards, Madison Square Gardens, Arrowhead P SkyDome, and Hollywood Park Race Track. Our corpo clientele includes well known organizations like Ford, I and Macy's.

There's nothing like developing products for the television industry. You lead the way with cutting edge technology, you get to work with video, you rub shoulders with the entertainment industry, and somehow, you feel like you're on the inside of some special club.

Ross Video had the best year in it's history last year. I believe it was due to the close relations we have with our customers and the superb technical expertise our people have to offer. I expect that we'll be able to do even more for the television industry this year with the release of many major new products.

We thought you might be interested in the stories behind some of the new products introduced by my team and how our customer's ideas, your ideas, find their way in to our standard products.

The Telecine Switcher Story

A customer called us up and wanted to use our CDK 104 digital keyer in his telecine suite. Apparently someone had said it would be good for this on the Telecine Internet Group.

The more the customer told us about his "switcher" needs, the more it became apparent that he didn't want a switcher at all. He wanted much of a switcher's hardware but a very different user interface.

He wanted a simple user interface that matched his colorist's basic needs - letter boxing, side by side comparisons, keying, and the occasional test chroma key. The rest of the switcher was overkill for the application.

He also had special needs that weren't addressed by switchers, like letter boxing with positioning accurate and repeatable to the pixel. He wanted a built in proc-amp to remove the color correction that his color corrector did to his vertical interval too!
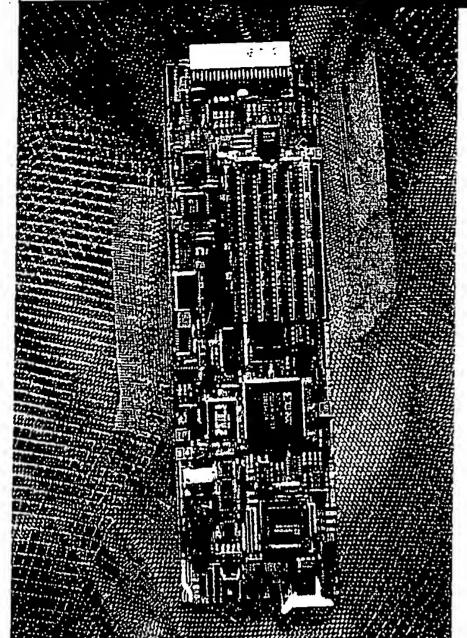
It became apparent, as we listened, that we had the opportunity to do something unique. We ended up with a new type of product, the CDK 104 Telecine Switcher.

We've since shipped lots of them. Ross also received the Television Broadcast NAB 97 Editor's Pick of Show Award "For the Advancement in the Art and Science of Television Broadcast". It hangs at the entrance to our lab.

Switchers, Keyers, & Terminal Gear

The DVB 8020 Story

We were working on a very large order for a pay-per-view satellite system. They were using our keyers and our DAs but had a problem where they needed to put different text on over 50 channels. The lowest cost solution involved capturing the output of their graphics system. A single card based frame store seemed best and I assumed that someone must sell such a thing.

I called most of our competitors, described what we needed, and even explained that large quantities would be involved. No one had anything to offer. Finally one competitor said, "This must really bug you guys - Ross could design that in a week!". I put down the phone and decided that he was right.

Two weeks later we had the designs for a new family of products: a frame store, a frame synchronizer, a full frame digital delay, an image store, and my personal favorite - a capture card that holds an image even after the power fails. We also have a unique card that does all of the above!
Three months later we shipped sixty-five units.

The Synergy Story

Synergy is a series of digital switchers that we've all been looking forward to. This product uses the absolute latest technology and wouldn't have been possible even a year ago.

Our engineers have managed to put a 64 input, 28 output, 4 MLE digital switcher with redundant power into an 11RU frame that consumes less that 600 watts of power fully loaded and adds less than one-quarter line of processing delay.
In fact, only two of the 11 slots in the system handle video processing - the rest are just for inputs!

The system has a highly modular design. It's possible to buy a 2 MLE switcher today and upgrade to a 4 MLE switcher in the future simply by adding a new panel and some circuit boards to your existing frame. That's because the entire series uses the very same rack frame. It also means that the smallest switcher in the family, the Synergy 2, has the very same powerful features as the largest, the Synergy 4.

Over the years many people have said that when we come out with our new digital switcher that we should build a DVE into it. Originally, I didn't want to do this because switchers are long-lived layering devices while DVEs are flashy effects devices that have to be updated relatively frequently to improve the look of a show. I felt that these

were best left external to free the customer to get the best on the market.

Over time I realized that there were two main uses for a DVE - one was for the flashy effects but the other was over-the-shoulder boxes. Everywhere I went, people were showing me tremendously expensive two and four channel high end DVEs that were being used just for multiple squeezebacks! It seemed like a terrible waste of money for most customers. This led us to the concept of a "Squeeze & Tease" in every keyer.

The Squeeze & Tease option is priced at a fraction of the cost of an external DVE. It's tightly coupled with the keyer so it doesn't require any aux busses - it uses the key bus instead. It comes with it's own over-the-shoulder border area that complements the keyer's other shadow generator. It's also completely integrated into the switcher so that even if you are using eight of them (as with the Synergy 4) the joystick and controls automatically go to the one you need.

We put the Squeeze & Tease into the keyer in such a way that we could squeeze more than just over-the-shoulders. We made it possible to squeeze any key type. This is where things get really exciting. We added a new button to each keyer called "FLY KEY". Press FLY KEY and then grab the switcher joystick to do a reposition, squeeze, zoom, mirror, and more... to say, a chroma key! Linear key with key channel? No problem.

Here's a good one: put a soft-edged preset pattern in the corner, take a shot of a person's face that's full screen, squeeze it down, move it into the preset pattern, and then put a soft transparent drop shadow under the preset pattern. Take the whole effect and push it off screen using the switcher's effects dissolve capability. All in one keyer. Repeat with other keyers if desired.

We didn't forget about the need for flashy transition effects either. External DVEs can still be controlled as you are used to and we've made even more possible with our "DVE SEND" system. This allows you to use external DVE transitions in exactly the same way that you use wipes on the switcher. You can "peel off" any combination of backgrounds.

Our engineers have managed to put a 64 input, 28 output, 4 MLE digital switcher with redundant power into an 11RU frame that consumes less than 600 watts of power fully loaded and adds less than one-quarter line of processing delay. In fact, only two of the 11 slots in the system handle video processing - the rest are just for inputs!

Another thing we did was to add something called "Preview Overlay". We found that many operators run switchers like other people type - they look at the monitor, not their fingers. This makes sense because in live situations you need to follow the action. To help out, our color-coded Preview Overlay puts the name of the current background source right onto the preview monitor. It also lets you know what the next transition type is: wipe, dissolve, or external DVE. It can all be added or removed from the monitor at the touch of a button.

Many newsrooms I've visited have a beat-up count up/down timeclock for judging when to come out of commercial. The problem is, people forget to start it when they're going into commercial. We built a timeclock into the switcher and put it up onto the Preview Overlay and then linked it to restart after transitions in the program/preset area. Problem solved.

Another problem in newsrooms is machine control. The VTR operator is usually in a different room from the switcher operator and tapes don't always get rolled when they should. You end up either with uncomfortable pauses on air or clips cut off at the start. We added a "ROLL VTR" button to the transition area of every MLE. Just select your VTR on the Preset Bus, press ROLL VTR, and take it to air. Simple. Even better, we can show the VTR's current timecode on the Preview Overlay. The switcher operator can then grab that timecode, store it in a memory, and then recue to that timecode later in the program or in a following show. Fast Forward, Rewind, Stop, Play, ... it's all there at the touch of a button. And not a menu softbutton, a "Custom Control" button right on the panel.

Custom Control refers to 32 programmable buttons just above the Program/Preset bus that are used to recall any combination of switcher memories, button pushes, and external device control. (There's 24 on the Synergy 2). Call these buttons your "imagination buttons" if you want because they'll do just about anything.

ROSS

Switchers, Keyers, & Terminal Gear

Want a button dedicated to rolling VTR GREEN? Okay. How about getting the next page of your still store up? Fine. Suppose you had a complex intro to a show that rolled some machines, initiated some DVE moves, recalled MLEs, took keys on and off air, and used some sources that weren't known until air time, all to complex timing? No problem, and rocket science sequence programming isn't required. Just hold down a Custom Control button and it will record your steps as you do them on the control panel. Then go back and insert pauses and external device control into the event list generated. Simple, yet powerful. You could even put the major moves in a newscast into several Custom Control buttons and do the show by the numbers. As easy as 1, 2, 3. When we showed the idea to customers in focus groups they got excited and told us to double the number of buttons. We did.

Chroma keying can also be a challenge on air. The talent usually walks on about one minute before a busy switcher operator has to go to weather. For tight situations like this we have a "simple" chroma keying mode that clears the controls that take time to set up and leaves the operator with clip, gain, and hue. Simulated soft edged shadows can then be added quickly with the border generator. If you have more time to do your setup and lighting you can bring the full force of the chroma keyer into play with controls like: chroma suppression, hue rejection, natural shadows, and more. There's also a special memory button in every keyer that brings back your preferred or default chroma keying settings. Everyone always asks about the quality of the chroma keys when buying a switcher so we put in a good one.

Another issue on live switchers is what to do about the program/preset area. On one hand it needs to be simple because that's where you "escape" to when things go wrong. On the other hand, people don't want to be forced to go up one MLE just to do a simple wipe. We put wipes in the program/preset as standard equipment and optimized the transition controls for the special needs of that area. For the downstream keyers, we simplified the layout (while maintaining full keying power when you need it), and added an 8 input mini key bus for each DSK to make it fast to find the source you need. All 64 inputs are still available to the DSKs at the touch of a button.
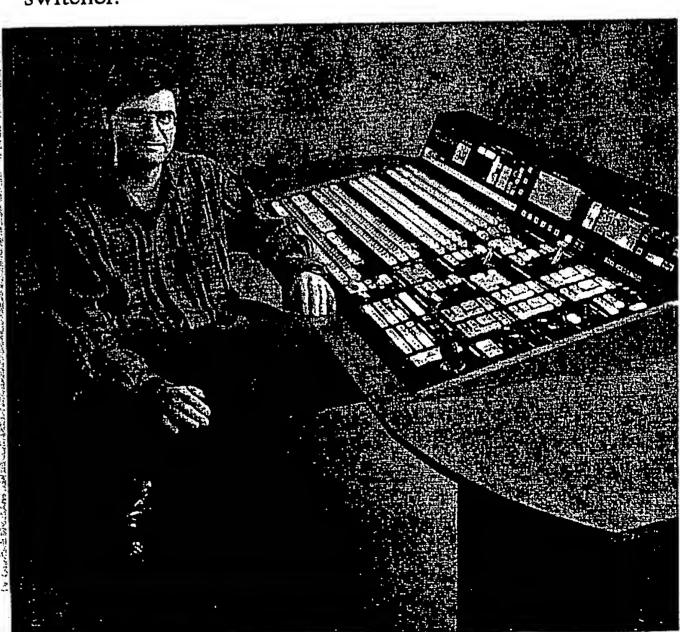
An impressive pattern generator is something people look for in a switcher. Synergy comes standard with two generators per MLE. A simple one for preset patterns in key 2 and a full featured one shared between wipes and preset patterns in key 1. Traditional wipes, rotary wipes, and matrix wipes are all there. There's also some new wipes that we think look pretty good. You'll have to come see a switcher to find out what I mean.

The shape and layout of the switcher panels were a major concern when we designed them. The area around a switcher operator is considered prime real estate and usually ends up looking something like an airplane cockpit. A lot of switchers recently have come onto the market with massive upper panels that prevent the use of space above the switcher without blocking the monitor wall. We kept the upper panel as low as possible. We also asked the second shortest person on our team to sit in front of a mock up of our largest panel and adjusted it until he could reach every button without stepping out of his chair. We know that people will have to work in front of these panels day in and day out. We wanted to make it as comfortable as possible.

It takes even more than a firm grasp of digital video technology to design a great digital switcher. Over the years my team and I have all logged months on the road working with switcher operators providing demos, training, and installation assistance. As a result, our customers and our designers understood each other. As the overriding goal, the following words were spoken over and over: "This switcher is for news, sports, and live production. A professional in the field has to be able to sit in front of the switcher and say - 'I can run this right now'." I passionately believe that we have made that switcher.
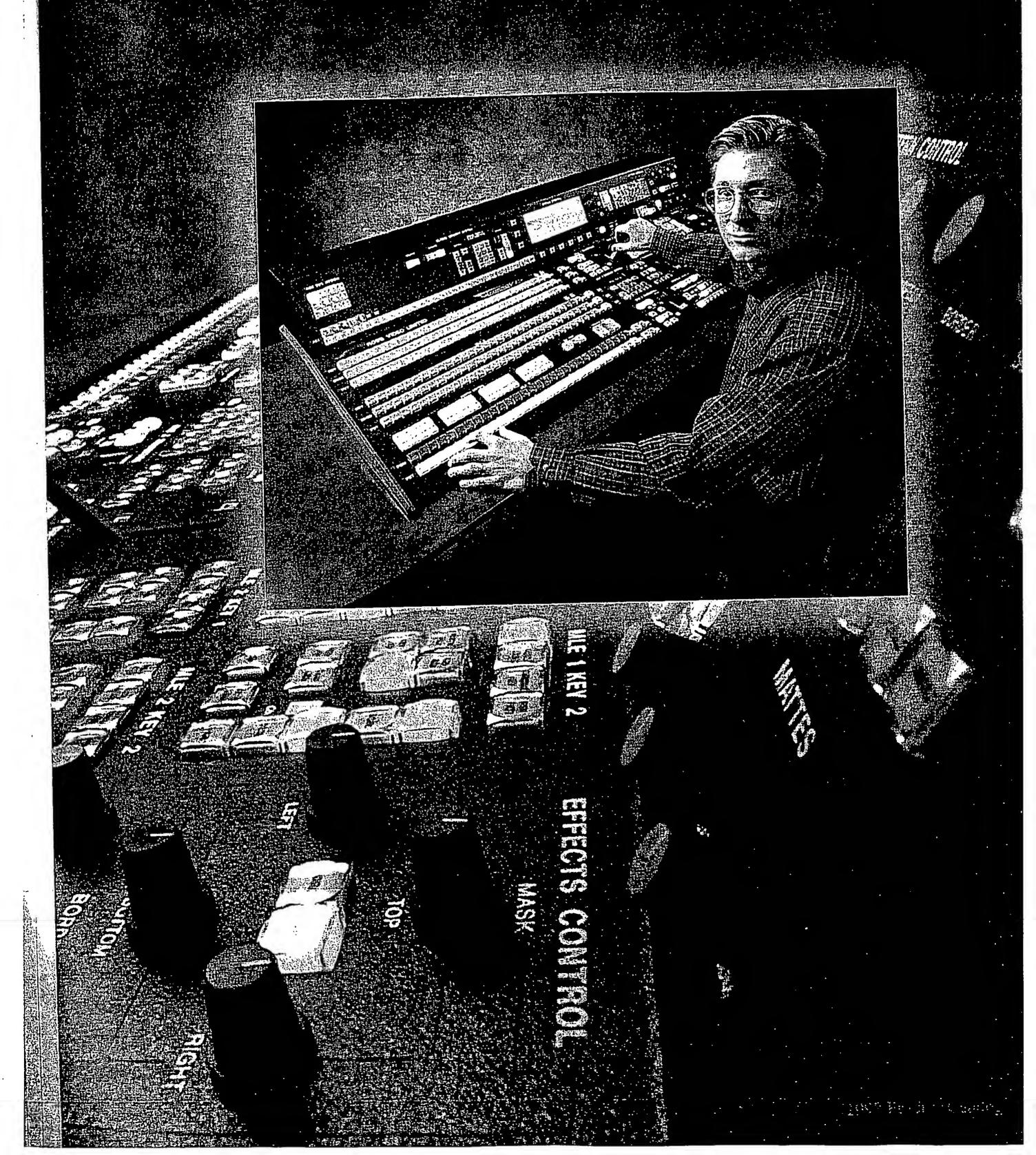
"This switcher is for news, sports, and live production. A professional in the field has to be able to sit in front of the switcher and say - 'I can run this right now.' I passionately believe that we have made that switcher."

David Ross
DRoss@rossvideo.com
If you have any ideas, give me a call. We listen.
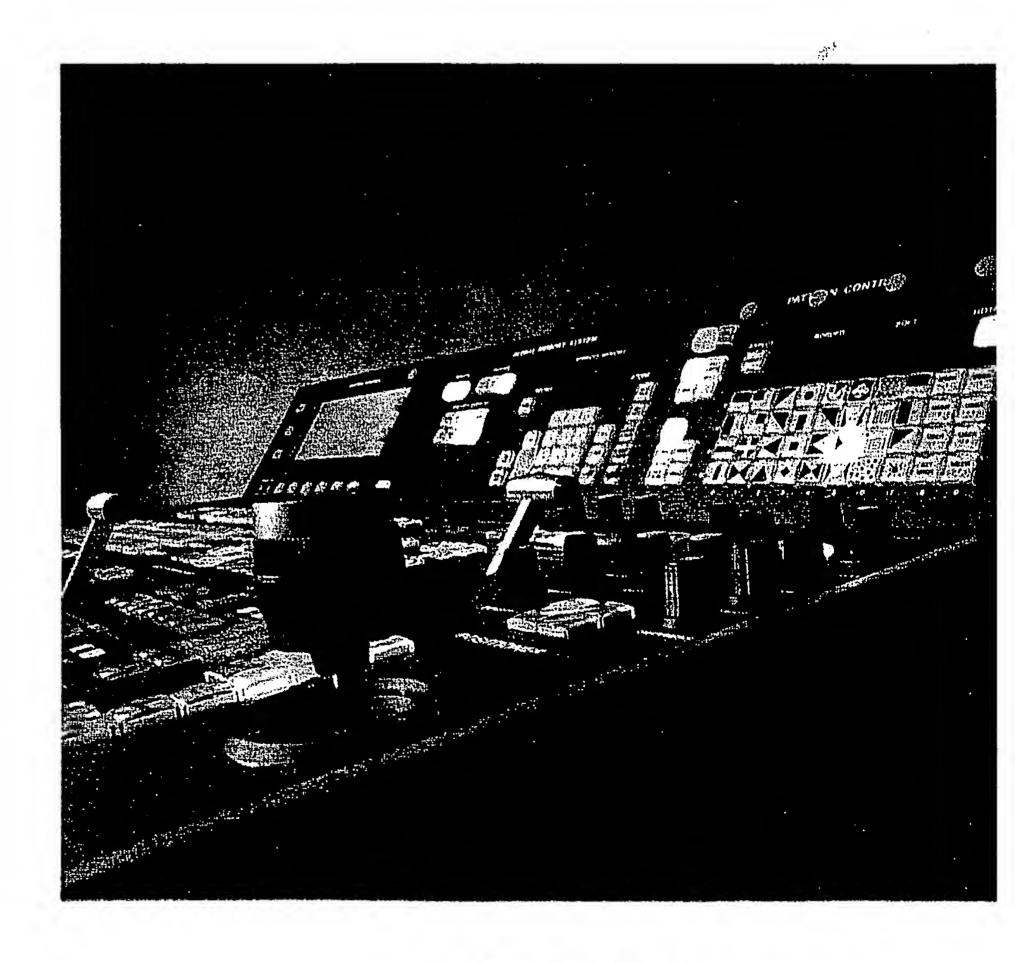
Switchers, Keyers, & Terminal Gear

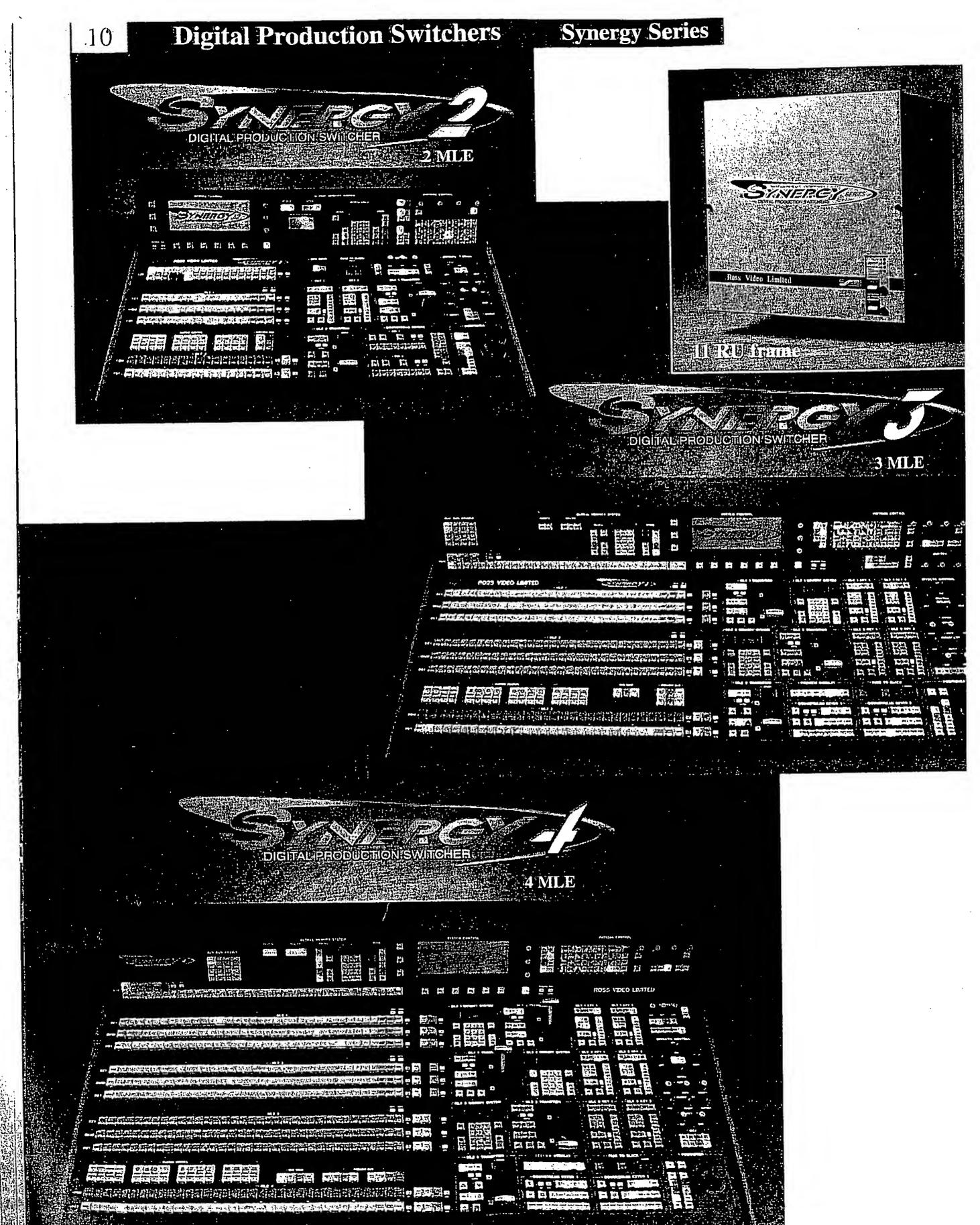# The New Standard in Digital Production Switchers

Ross Video developed the Synergy series of digital production switchers for live news, live sports, and live production. Because the switcher is the center of the action, it is important that it be powerful and versatile yet maintain its ease of operation. This frees the operator to concentrate on the programming instead of the equipment.

The Synergy series, our fourth generation of switchers, was designed with the direct input of video professionals experienced in news, sports, and mobile production. Key members of the Synergy design team are part of an ongoing program where they provide switcher demonstrations, assist with switcher installation, and train operators. As a result, the Synergy line continues to advance Ross Video's tradition of easy to use and logical panel layouts.

ROSS

**Switchers, Keyers,
& Terminal Gear**

Synergy 2 — DIGITAL PRODUCTION SWITCHER — 2 MLE

11 RU frame

Synergy 3 — DIGITAL PRODUCTION SWITCHER — 3 MLE

Synergy 4 — DIGITAL PRODUCTION SWITCHER — 4 MLE

Series Highlights

Huge Input Matrix.
The Synergy frame can accept up to 64 video inputs, purchased in sets of 8.

Compact Size
The 11 RU Synergy frame can hold 64 inputs, 4 fully optioned MLEs, 12 timed aux buses, an extender board, and full redundant power.

Low Power
500 watts for the frame and 350 watts for the panel is all the power that Synergy requires. They plug into standard power outlets.

Growth Path
The same video processing frame is used for our 2, 3 and 4 MLE switchers. You have the option of buying a smaller system now and then add another MLE and a larger control panel as your needs grow.

Powerful Keyers
These full function keyers have dedicated pushbuttons, flying borders for every key type, Squeeze & Tease, chroma keying, key over transition, quick key preview, transition generators, and bi-color on-air status.

Squeeze & Tease
A simple DVE can be built into every keyer - up two per MLE. Every type of key can be repositioned, squeezed, and zoomed. In fact, it's possible to simultaneously crop, reposition, mirror, squeeze or zoom, mask, border, and add a glowing transparent color-washed drop shadow to a key inside a single keyer.

Chroma Keying
The chroma keyers featuring chroma suppression, hue rejection, natural and simulated shadows, and transparencies were designed to be used in fast-paced productions.

VTR Control
Select a VTR on the PST bus, display it's current time code on the preview monitor, roll it from the transition area, and take it to air. Fast forward, rewind, and cue to time code are also available at the touch of a button on the control panel.

Custom Control Hot Buttons
32 macro buttons have been positioned close to the operator for powerful single touch control. Recall any combination of switcher memories, button pushes, and external device control.

Two Pattern Generators per MLE - Standard
The Synergy series comes standard with a primary pattern generator for wipes and PST PATT 1 and a secondary pattern generator for PST PATT 2. The primary generators come equipped with extensive traditional, rotary, and matrix wipes.

Fully Featured "Program/Preset"
We didn't skimp when we designed this switcher. The bottom MLE, normally referred to as the Program/Preset area has full effects capability including complete wipes and dual DSKs with chroma keys, preset patterns, and Squeeze & Tease.

Unique Preview Overlay
This powerful option presents VTR time code, a count up/down timer, source ID, safe title, and more. They are individually selectable and put on the preview monitor for quick reference.

External DVE Integration
DVE effects from all popular DVEs are seamlessly integrated as switcher transitions. Push, slide, and warp keys, backgrounds, or both without tying up keyers or worrying about aux buses, signal paths, or tallies.

Upgrades from the Web
Software and even some hardware can be upgraded by downloading files from our web site onto a standard floppy disk. It's fast and it's easy.

Affordable
This is a powerful switcher for an excellent price.

Built to Last
Its no secret that Ross products are tough. They're built to handle years of demanding, continuous use. The Synergy series is backed by a 3 year transferable warranty.

ROSS
Switchers, Keyers,
& Terminal Gear

Synergy Series Ordering Information

S4-001 **Synergy 4 Digital Production Switcher**
- 4 MLE Multi-Level Effects (MLE) Systems
- 32 Serial Digital Inputs (Card Expandable to 64)
- 35 Source Crosspoint Buttons on Control Panel
- 22 Serial Digital Outputs
- 20 Matte Generators

S3-001 **Synergy 3 Digital Production Switcher**
- 3 MLE Multi-Level Effects (MLE) Systems
- 24 Serial Digital Inputs (Card Expandable to 64)
- 30 Source Crosspoint Buttons on Control Panel
- 20 Serial Digital Outputs
- 15 Matte Generators

S2-001 **Synergy 2 Digital Production Switcher**
- 2 MLE Multi-Level Effects (MLE) Systems
- 16 Serial Digital Inputs (Card Expandable to 64)
- 17 Source Crosspoint Buttons on Control Panel
- 18 Serial Digital Outputs
- 10 Matte Generators

Synergy 4, Synergy 3 and Synergy 2
Standard Systems include:
- Complete Control Panel
- Chroma Keying in Every Keyer
- 2 Pattern Generators per MLE
- Wipes in Program/Preset
- 12 Untimed Aux Busses
- Disk Drive & System Control Area
- Custom Control Macro Buttons
- 50 Event Memory System
- 12 GPI Inputs and 12 GPI Outputs
- 36 Tally Outputs
- 10 Meter (33 feet) Control Panel Cable
- System Manuals
- 3 Year Transferable Warranty
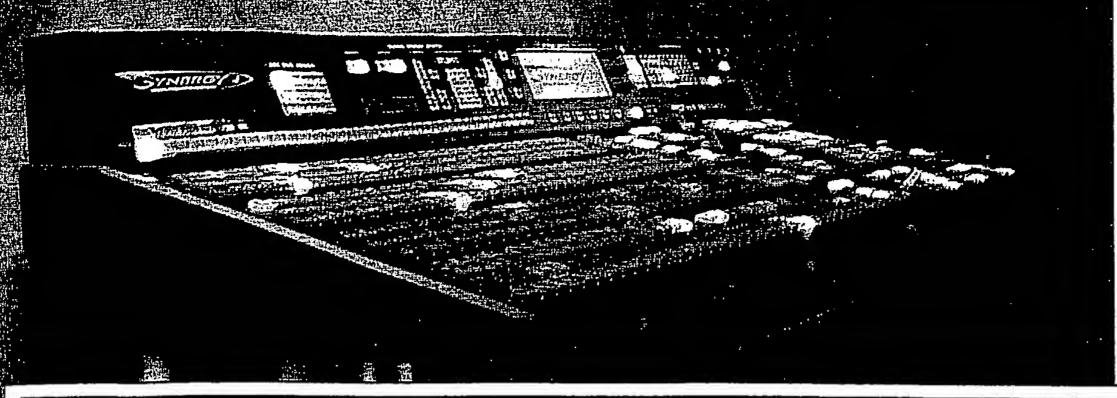
Synergy Series System Options Table

Synergy 4	Synergy 3	Synergy 2	
S4-022	S3-022	S2-022	8 Additional Serial Digital Inputs
S4-023	S3-023	S2-023	Conversion Frames (DFR-8110 includes 1 power supply)
S4-031	S3-031	S2-031	Clean Feed
S4-032	S3-032	S2-032	Preview Overlay
S4-140	S3-140	S2-140	Squeeze & Tease (MLE 1 keyers)
S4-240	S3-240	S2-240	Squeeze & Tease (MLE 2 keyers)
S4-340	S3-340	N/A	Squeeze & Tease (MLE 3 keyers)
S4-440	N/A	N/A	Squeeze & Tease (MLE 4 keyers)
S4-141	S3-141	S2-141	Dual Border Generator (MLE 1 keyers)
S4-241	S3-241	S2-241	Dual Border Generator (MLE 2 keyers)
S4-341	S3-341	N/A	Dual Border Generator (MLE 3 keyers)
S4-441	N/A	N/A	Dual Border Generator (MLE 4 keyers)
S4-051	S3-051	S2-051	Timed Aux Bus (max of 12)
S4-052	S3-052	S2-052	Dedicated Remote Aux Panel (incl. 10 meter cable)
S4-053	S3-053	S2-053	Assignable Remote Aux Panel (incl. 10 meter cable)
S4-054-xxx	S3-054-xxx	S2-054-xxx	Custom Cable for Aux Panel (per meter, replaces 10 meter cable)
S4-060	S3-060	S2-060	Editor Interface
S4-061	S3-061	S2-061	VTR Remote Control (8 VTRs)
S4-062	S3-062	S2-062	DVE Send & Remote Control
S4-070	S3-070	S2-070	Extended Tallies (32-64 or Preview Tallies)
S4-071	S3-071	S2-071	Redundant Power (Frame & Panel)
S4-072	S3-072	S2-072	Extender Board
S4-073	S3-073	S2-073	Spare Parts Kit
S4-075-xxx	S3-075-xxx	S2-075-xxx	Custom Cable for Main Panel (per meter, replaces 10 meter cable)
S4-080	S3-080	S2-080	Additional Technical Manual
S4-081	S3-081	S2-081	Additional Operator's Manual
S4-082	S3-082	S2-082	Additional Installation Manual

Synergy Specifications

PHYSICAL CHARACTERISTICS

Synergy 4 Control Panel

width	56.25" (143.9 cm)
height	12.5" (31.8 cm)
depth	29.0" (73.7 cm)
height above desktop	10.0" (25.4 cm)
desk cutout width	54.75" (146.7 cm)
desk cutout depth	28.0" (70.5 cm)

Synergy 3 Control Panel

width	51.75" (131.4 cm)
height	11.625" (29.5 cm)
depth	24.125" (61.3 cm)
height above desktop	9.25" (23.5 cm)
desk cutout width	50.25" (127.6 cm)
desk cutout depth	23.0" (58.4 cm)

Synergy 2 Control Panel

width	36.875" (93.7 cm)
height	11.25" (28.6 cm)
depth	22.375" (56.8 cm)
height above desktop	9.0" (22.9 cm)
desk cutout width	35.5" (90.2 cm)
desk cutout depth	21.25" (54.0 cm)

Rack Frame
11 rack units (11 RUs)

width	19" (48.3 cm)
height	19.5" (49.5 cm)
depth	19.25 (48.9 cm)

Note: Specifications are subject to change without notice.

Video Inputs
Number of inputs (any model):   up to 64

All inputs are 10 bit CCIR-601 serial digital
non-looping. Inputs are purchased in sets of 8.
The Synergy 4 comes standard with 32 inputs, Synergy 3
with 24 inputs, and Synergy 2 with 16 inputs. Inputs can be
used for either key or video.
The reference input is CCIR 601 and is chosen as
one of the standard inputs. External A-D conversion
is required for analog references.

Video Outputs

Number of Outputs:	
MLE 1, 2, & 3 PGM	1 each
MLE 1, 2, & 3 PV	1 each
MLE 4 PGM (main PGM)	2
MLE 4 PV	1
main PV without overlay	1
main PV with overlay	1
clean feed	1
expansion (future use)	4
aux bus (1 to 12)	1 per bus

Outputs for Synergy 4 (shown above)
On the Synergy 3, MLE 3 becomes main PGM and MLE 4
is inactive.
On the Synergy 2, MLE 2 becomes main PGM and MLE 3
and MLE 4 are inactive.
All video outputs are 10 bit CCIR-601 serial digital.
EDH is inserted into all video outputs except untimed aux
busses and can be disabled.

SYSTEM TIMING
All video inputs are zero time relative to reference input, auto
timing will correct for inputs out of time by up to +/- 0.25 line
(16us).
The delay through the switcher is less than one quarter line
(approx. 12us). This delay can be manually increased in
37ns steps to a maximum of 32us in order to accommodate
late video signals.
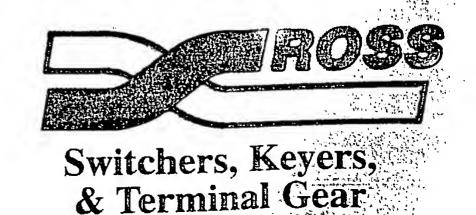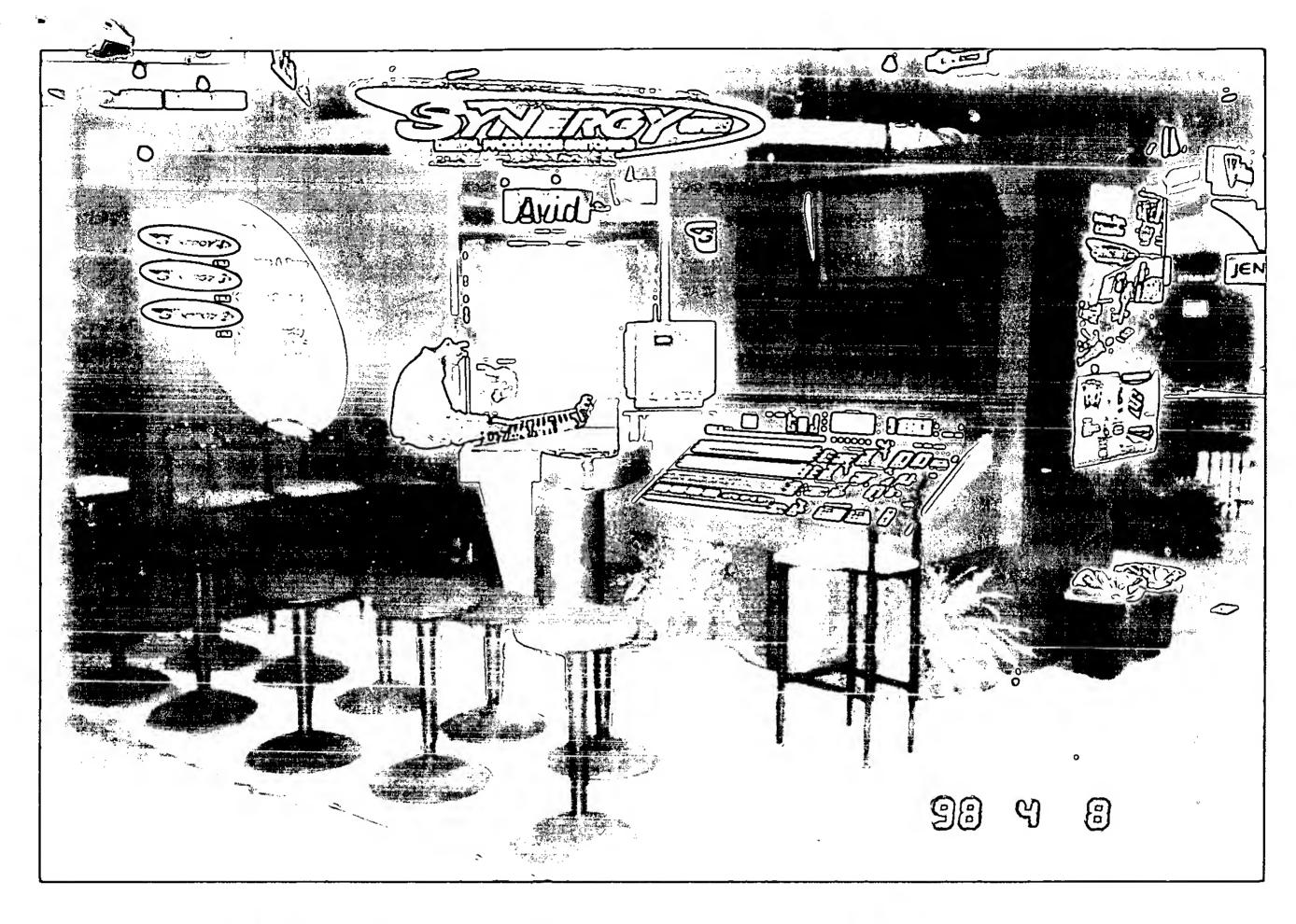
ROSS

**Switchers, Keyers,
& Terminal Gear**

EXHIBIT B

98 4 8

98 4 8

EXHIBIT C
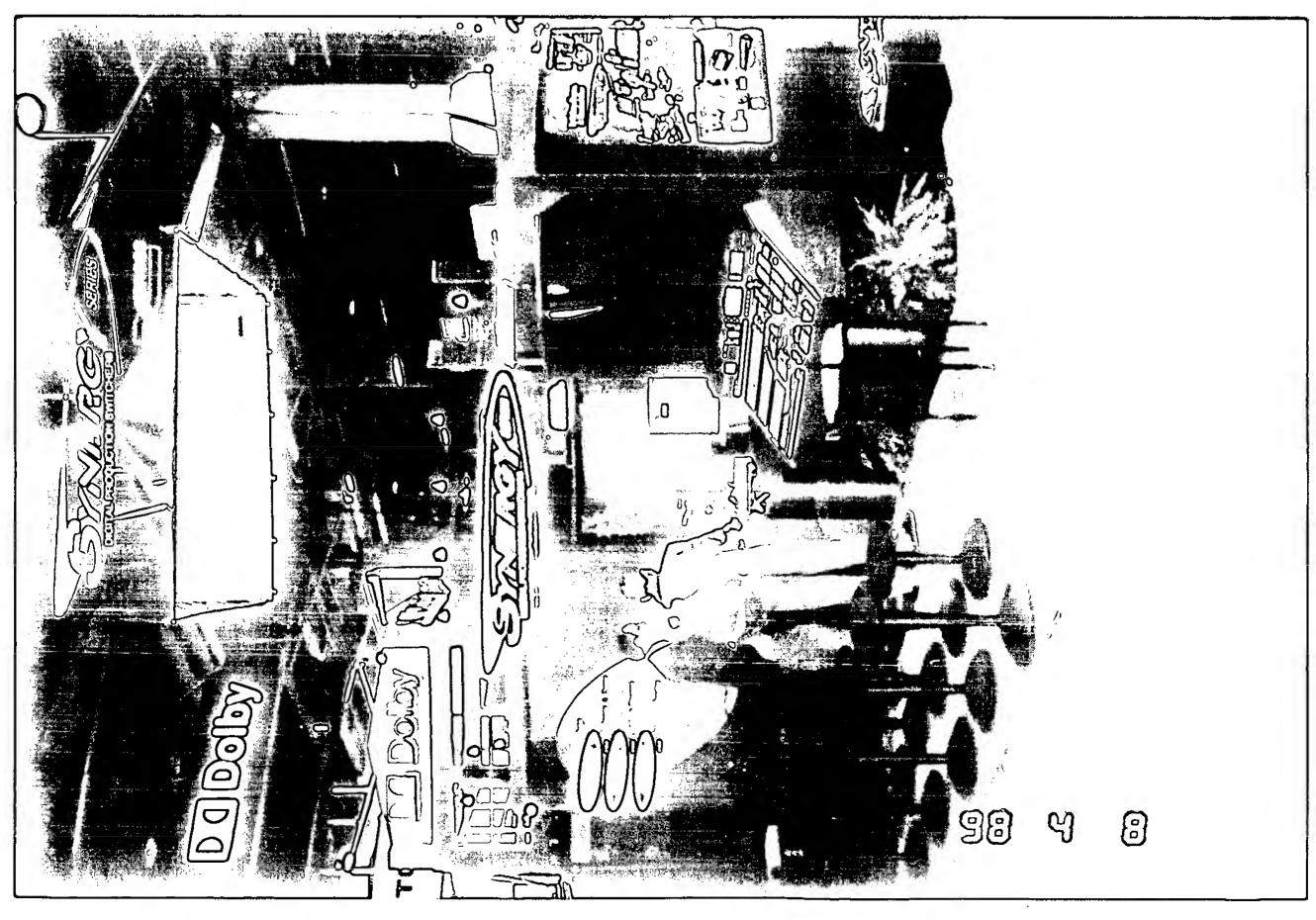
On Screen/Operational

Talk

1.0 Music Introduction

Synergy is Rising music Taped Version with Lyrics to play to end of first verse then fade. Karen picks up the microphone and watches the screen, David. The music fades...

David "Doodles" on the Synergy showing some really cool effects, squeezeback, custom control, chroma keys, etc.

2.0 Introduction to the Series

Karen: Hey David, what's up?

David: Hi Karen, I'm just going over some things on the new Ross Switcher.

Karen: What's this? Ross Video with a Digital Production Switcher! I know a lot of people who have been waiting a while for that.

David: Not just one, a whole series of Switchers. The Synergy Series. Ross is introducing 2, 3 and 4 MLE Switchers, the Synergy 2, 3 and 4. The one I'm playing on now is the biggest, the Synergy 4. These switchers are designed specifically for news, sports and live production.

More Doodling.

Karen: OK, but why now, isn't Ross a little late into the digital switcher market?

David: Actually we're just in time with the majority of stations just now getting ready to move to digital. Also, we were able to put the latest technology in our Synergy Series that gives us features with many advantages over the competition. We built a huge I/O matrix with up to 64 Inputs and 28 Outputs. 12 Aux busses are standard equipment. Synergy 4 has 4 MLEs and each MLE comes standard with two wipe generators, three matte generators, two complex matte generators, full preview and 2 keyers.

More Doodling. Show wipes with complex mattes. Animated matrix wipes, full screen soft wipes.

Karen: Wow

David: Not only that, but we built in a lot of other features like Custom Control, Preview Overlay, Squeeze & Tease and much more into each member of the Synergy Series. Here, let me show you.

3.0 Squeeze & Tease

Karen: Squeeze & Tease, that sounds like it belongs more on a toy than a switcher.

David: Well, basically we built a 2D DVE into every keyer. You can have two of these per MLE and do lots of neat stuff with them. Like.... Freeze, Squeeze, Mirror, Zoom, Reposition and Push. It's great for lots of over the shoulder boxes....Watch this, I punch up the key source, press the Fly Key button, Squeeze and Reposition, and there it is – an over the shoulder box. I can do 2 per MLE. Look at this.... see.

David proceeds to rapidly Squeeze and Tease until 4 OTS boxes are on screen.

Karen: That can come in very handy. What else can it do?

David: Well, because it's tied into every keyer and uses the key bus, you can Fly any kind of key. Check this one out. I press my CG Hot Key, then Squeeze and reposition. Easy. Even if the key isn't in the right size or position I can make it right.

Squeeze & Reposition the key while talking with cool anitmated matrix wipe.

Karen: I think I'm starting to get this. You mean a lot of the basic 2D functions I used to have to pull in my DVE for I can now do in my switcher, right there on the keyer.

David: Right. Watch this. Using the Squeeze & Tease I can put four boxes on air and then wipe to four more boxes. Each box can be independently transitioned too. This is all built into the switcher.

Cuts to 4 OTS boxes onscreen. Matrix wipes to four other OTS boxes and then dissolves the boxes off one by one.

4.0 DVE Transition

Karen: I guess that will free up my expensive external DVE for the 3D stuff like page turns.

David: That's right. That last effect was all Synergy Squeeze & Tease.

Karen: But how does Synergy integrate with my external DVE.

David: Just like a wipe. Check this out. I preset the effect on the external DVE (in this case a Pinnacle DVExtreme) and then just run it from the fader arm, auto transition, or Custom Control button on the Synergy Switcher. You can peel off any combination of background, key 1 and key 2. Look

David proceeds to peel off combinations of background + keys, keys alone, to reveal more OTS boxes. *(The crowd goes wild)*

4.0 Custom Control

Karen: OK. Squeeze & Tease I like, and the DVE integration is very cool. One thing I've always liked about using Ross Switchers is how easy they are to operate. Anyone can sit down and be able to run it in a matter of minutes. It looks like you've continued that with the Synergy Series and these new features.

David: *Cutting Karen Off.* You haven't seen anything yet. Remember, these switchers were designed for News, Sports, and Live Production. Take a look at the panel just above the program / preset bus. There's a bunch of Hot Buttons we call Custom Control. They can do ANYTHING.

Karen: Wait a minute. ANYTHING?

David: Anything. *(confident as hell)*

Karen: Yeah right, go ahead tell me about these "magical" *(mocking tone)* Custom Control buttons.

David: All right. Custom Control buttons trigger any combination of macros, memory recalls, VTR remote control, DVE remote control, and peripheral control all at the push of one button. Watch. I'll do ... (something). Next time you press that button it will all come back instantly. Consider these your imagination buttons.

Karen: Pretty Cool. What about chroma keys.

At the "magical" push of a Custom Control Hot Button David Switches to a setting previously seen.

David magically pulls up another neat switcher setting.

5.0 Chroma Keyers

David: I'll show you chroma keys. We up-sample to 4:4:4 internally for a top quality key. Look at how well Eliza keys! There's two chroma keyers per MLE built in standard. Eight in total. You'll never have to remember where a chroma keyer is.

Shows Eliza keying.

Karen: Very Nice.

6.0 Downstream Keyers

David: We also did something neat with the downstream keyers by giving them their own busses with 8 buttons for commonly used sources, giving you instant access to the sources you need. You can also copy any source down to one of the buttons by holding it down and pressing the source you want on any bus. Like this. If I want to do a Preset Pattern key on the DSK I copy down the whole key setting from another keyer. Like this!

Karen: That'll make my life easier. But you know what I've been bugging you about for years...

David: Oh here we go.

Karen: In the past I've to switch and direct a lot of my own shows. I need to follow the action so I tend to switch the way most people type, without looking down at my hands. This has occasionally led to my making mistakes I classify as finger problems, you know dissolving instead of wiping....

Show some DSK transparent logo type keys.

Shows a preset pattern key on the DSK.

7.0 Preview Overlay

David: Trust me, I've seen it. We solved that one and more. I'm going to use a Custom Control button to fire a GPI that switches the monitor you are looking at to the Switcher Preview Bus. First, we have the usual Safe Area and center crosshairs.

Next, we put in Source ID and next transition icons so that you can see the name of the source you will be going and transition type, right there onscreen.

Karen: So I can see where I am and where I'm going.

David: That's right and there's more! In most control rooms I've seen there's a beat up time clock for timing commercials. We built that

Hits a Custom Control Button to fire a GPI controlling a DSS 2x1 to switch the big monitor to preview. Pulls up SA & center.

Pulls up source ID.

Pulls up Count Up/Down timer and shows how it is triggered.

right into Synergy. This is triggered by the start of a transition on the switcher. See, pressing cut resets the timer.

Another thing, and this is really cool, we put in a VTR Time Code Display so that you can see where your VTR is parked and when it is rolling. It's really nice with our VTR Remote Control feature.

Karen: That's great, but is it onscreen all the time?

David: Actually, there's two preview outputs – one with overlay and one without. On the one with the overlay, you can turn them all on or off at once or individually.

Call our Preview Overlay a Heads up Display for Technical Directors.

Karen: Thank you. And I notice that you made the upper panel nice and low so I can see the preview monitor. Wow. The Synergy Series sure has a pile of features. I'll bet the electronics frame takes up a whole equipment rack.

8.0 Awesome Specs

David: Remember, Synergy was built with the latest technology. A loaded Synergy 4 with all the features I've just shown you, 64 Inputs, 12 Aux Busses, and Redundant Power all go into an 11 RU frame.

Karen: Cool!

David: Synergy's Digital Processing is 10bit 4:2:2 Component Digital. It's 16:9 switchable and has less than a quarter line of delay.

8.0 Wrap Up

Karen: Well, thank you David, for introducing us to the Synergy Series.

And for those of you who have been paying attention, I have a Synergy Shirt for whoever can answer my skill testing question:

Yadda yadda yadda....

(Tosses shirt at winner).

Thanks to all of you for coming. If you have any questions or would like more detail please come and see me or anyone with a Ross shirt.

Thanks Again.

Pulls up VTR TimeCode with VTR rolling. If machine control works we can enhance this. Need to find fake timecode.

Toggles a couple of overlays on and off.

Picture of the Frame. (need to get a source with this on it)

(Version 6)

Shows the Keyers Again, Smoke & Water.

More Doodling by David to take us out.

EXHIBIT D

EXHIBIT D

FIG. 13

FIG. 3

FIG. 5

FIG. 6

FIG. 7

FIG. 8

FIG. 9

FIG. 10

FIG. 11

FIG. 12

PCB
PCB1
4000-140

TOOLING HOLES
O7 O3 O2 O28

SMT FIDUCIALS
O4 O5 O6
FIDUCIAL FIDUCIAL FIDUCIAL

WASHERS
WSHR1 WSHR2 WSHR3 WSHR4

STANDOFF 1/2 LONG
MP1 MP2 MP3 MP4

JUMPER PLUGS
JMP2 JMP3 JMP4
003-009 003-009 003-009

BGA TARGETING FIDUCIALS
O26 O27

PROTECTIVE HEADER SHROUD

STITCHING HOLES
O10 O11 O12 O13 O14 O15 O16 O17 O18 O19 O20 O21

ROSS VIDEO LIMITED

FUNCTION   HARDWARE
TITLE   MULTI-LEVEL EFFECTS

FILE   M4140-01.SCH
DRAWN BY   GIB
DESIGNED BY
DATE   06 SEP 98
NUMBER   4000A-140
TYPE   SCHEMATIC
ISSUE   3
SHEET   1 OF 1

FIG. 14

CHANNEL 1 DE-INTERLACE DE-MULTIPLEX AND POSITION

CHANNEL 2 DE-INTERLACE DE-MULTIPLEX AND POSITION

ROSS VIDEO LIMITED

FUNCTION DE-INTERLACE & POSITION

TITLE SQUEEZE&TEASE

NUMBER 4000A-048

FIG.15

CHANNEL 1 RE-INTERLACE
AND POSITION

CHANNEL 2 RE-INTERLACE
AND POSITION

FIG. 16

Best Available Copy

FIG. 17

FIG. 18

FIG. 19

FIG. 20

MATTE/VIDEO MIXER

FIG-21

Matte/Video Mixer
Squeeze and Tease

FIG-22

FIG. 23

FIG. 24.

FIG. 25

FIG. 26

FIG. 27

FIG. 28

FIG. 29

FIG. 30

HORIZONTAL PULSE GENERATION

VERTICAL PULSE GENERATION

REFERENCE INPUT

ROSS VIDEO LIMITED

MLE XILINX

FIG. 31

FIG. 32

FIG. 34

EXHIBIT E

This is Exhibit.............✔.............. referred to in the

affidavit of ...... $\mathcal{DAVID}$ $\mathcal{Ross}$ ....

sworn before me, this............26..............

day of......... $\mathcal{June}$ ....19.07....

....
A COMMISSIONER FOR TAKING AFFIDAVITS

Fig. 3

Best Available Copy

FIG. 33

FIG. 4

FIG. 5

FIG. 6

FIG.10

FIG. 11

FIG. 12

Best Available Copy

FIG. 13

FIG. 14

CHANNEL 1 DE-INTERLACE
DE-MULTIPLEX AND POSITION

CHANNEL 2 DE-INTERLACE
DE-MULTIPLEX AND POSITION

ROSS VIDEO LIMITED

FUNCTION DE-INTERLACE & POSITION

TITLE SQUEEZEZESTEASE

NUMBER 4000A-048

CHANNEL 1 RE-INTERLACE AND POSITION

CHANNEL 2 RE-INTERLACE AND POSITION

ROSS VIDEO LIMITED

FIG.15

FIG. 16

FIG. 17

CHANNEL 2 SCALING

CHANNEL 1 SCALING

ROSS VIDEO LIMITED

SQUEEZEGTEASE

4000A-04B

FIG.18

FIG. 19

FIG. 20

FIG-22

FIG. 23

MATTE/VIDEO MIXER

FIG. 21

FIG. 8

FIG. 7

FIG. 9

FIG. 24

Best Available Copy

FIG. 2S

FIG. 26

FIG. 27

FIG. 28

FIG. 29

Best Available Copy

FIG. 30

FIG. 31

Best Available Copy

FIG. 32

Best Available Copy

FIG. 33

FIG. 34